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Original Article

Predicting delay to treatment of urinary incontinence among urban community-dwelling women in China

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ABSTRACT

Purpose: To determine the effect of socioeconomic factors and variables related to delay to treatment on Chinese women with urinary incontinence (UI).

Methods: We conducted a cross-sectional survey involving 346 incontinent women living in three urban communities. We enrolled a representative subsample of 196 women who sought treatment for UI within the next six months in the study. Socioeconomic and clinical characteristic data were collected using a self-administered questionnaire and the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form.

Results: Of the 196 women (age [mean and standard deviation] 51.58 ± 7.91 years), the delay ranged 1–15 years; 64 women (32.7%) reported a >3-year delay. Age (odds ratio [OR] = 1.98, 95% confidence interval [CI]: 1.31–3.00), lower UI severity (subjective) (OR = 2.32, 95%CI: 1.38–3.87), and non-mixed UI (stress or urgency UI alone, OR = 1.60, 95%CI: 1.11–2.32) were risk factors for longer delay.

Conclusion: Women who were older, had lower subjective UI severity, and who reported only stress or urgency UI tended to delay treatment longer; such patients should be targeted for health education and intervention regarding UI in urban communities.

1. Introduction

Urinary incontinence (UI), defined as the "involuntary loss of urine that is social or hygienic problem", is one of several lower urinary tract symptoms (LUTS) affecting women's health worldwide [1]. Although there is consensus that UI affects quality of life (QOL) negatively in women [2], the challenge to healthcare providers is that women tend to wait

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before seeking timely and effective treatment. Delay to treatment creates a vicious cycle for women living with UI because they attempt to adjust their lives around it, i.e. restricting physical activities and enduring the psychological effects of being incontinent [3]. Untreated UI becomes a chronic progressive condition; subsequently, the cost of treatment and use of absorbent products also imposes a substantial economic burden [4,5]. Therefore, timely reporting and treatment of early symptoms may contribute to better recovery, higher QOL, and lower economic burden.

Many studies have proposed possible reasons for the delay to treatment for UI. Existing studies have highlighted misconceptions (i.e. viewing UI as a natural outcome of aging and/or childbirth and that it is untreatable) [6], psychosocial barriers (shame, embarrassment, fear of discrimination) [7,8], fear of invasive treatment, and adequate self-coping strategies [9] as some of the common barriers to seeking treatment. Despite the greater availability and effectiveness of treatment options, including conservative therapy and surgical treatment, delay to treatment for UI has remained unchanged over the last 20 years [10–12]. The identification of women who are incontinent and likely to delay treatment longer is still unclear. Previous studies have demonstrated that socioeconomic factors have a significant influence on delayed reporting in breast cancer [13], lung cancer [14], and cervical cancer with late rectal complications [15]. Moreover, socioeconomic status and UI-related variables could also have considerable impact on delayed treatment-seeking in women with UI [16,17]. To the best of our knowledge, no study has explored the effect of socioeconomic factors and UI-related variables on the length of delay to treatment in women with UI. Therefore, we designed the present study to examine whether these variables could predict longer delay to treatment for UI among women living in China.

2. Materials and methods

2.1. Study design and participants

From May to October 2011, we conducted a cross-sectional survey of 346 women from three urban communities in Jinan, China. We used two steps to select eligible women: A community nurse asked women who visited community health service centers during this period if they had involuntary urine leakage and had no experience of seeking treatment for UI previously. The nurse was trained prior to the study, and the definition of UI used was based on the report proposed by the International Continence Society. If the woman responded affirmatively, she was invited to participate in the study. Second, we included women if they were ≥18 years old and reported being incontinent at least once a month on average for at least three months. We excluded women who reported urinary tract infection, pregnancy, or giving birth within the past three months or at her terminal stage. We provided personal assistance (questions read or filled in by researchers) for those with visual or writing difficulties; we obtained informed consent prior to administering the survey. We selected 196 eligible women who reported involuntary urine leakage to community nurses and who sought treatment for UI within the next six months for secondary analysis.

2.2. Measurements

2.2.1. Socioeconomic characteristics

We collected information on socioeconomic status, which included age, marital status (married or unmarried including single, divorced, or widowed), educational level (primary school or illiterate, middle school, high school, or college), monthly household income per person, and health insurance (yes or no).

2.2.2. Objective UI severity and UI types

Objective UI severity and UI type were assessed using the Chinese version of the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI SF) [18]. Previously, Huang et al. [18] tested the Chinese version of the ICIQ-UI SF and confirmed its satisfactory content validity, Cronbach's α coefficient (0.71), and test–retest reliability (0.71–0.96). The first three items in the scale were used to assess the frequency and amount of urinary leakage, the total score for which represents the objective UI severity. For this study, the severity score of 0–21 was used to construct four levels of UI severity: slight (1–5), moderate (6–12), severe (13–18), and very severe (19–21) [19]. UI type was assessed using responses to the fourth item in the ICIQ-UI SF [18].

2.2.3. Subjective UI severity

We assessed subjective UI severity using a self-designed question: "How much does leaking urine affect your work or daily life?" The response categories used a 4-point scale (1 = not at all, 2 = slightly, 3 = moderately, 4 = severely). A higher score demonstrated more perceived impact from UI.

2.2.4. Delay to treatment for UI

Kinchen et al. [20] suggested that UI symptom duration >3 years was significantly associated with treatment seeking; thus, longer delay to treatment in our study was operationalised as an interval of >3 years between recognition of the first symptom and the report of seeking treatment for UI within the next six months. All eligible women were divided into those who had delayed seeking treatment for ≤3 years and those who had delayed seeking treatment for >3 years after recognising the first symptom.

2.3. Ethical approval

We performed the study in accordance with the ethical standards of the Helsinki Declaration. The Shandong University ethics committees granted approval for the study. We obtained informed participant consent before the study commenced. All information collected from the participants was kept confidential and anonymous.

2.4. Statistical analysis

All statistical analyses were carried out using SPSS version 16 (SPSS Inc., Chicago, IL, USA). Age, marital status, educational

level, monthly household income per person, health insurance, subjective UI severity, objective UI severity, and UI type were considered potential risk factors, while delay to treatment (≤3 years, >3 years) was used as the dependent variable. Variables of the characteristics of interest were summarised using descriptive statistics. The odds ratios (ORs) were calculated using univariate and multivariate logistic regression. All tests were two-tailed and a p-value ≤ 0.05 was considered statistically significant.

3. Results

3.1. Demographic and clinical characteristics

We enrolled 196 eligible women to complete this analysis. Delay to treatment for UI ranged 1–15 years (mean = 3.29, standard deviation = 2.38); 64 (32.7%) women reported >3-year delay. The age range of the participants was 33–70 years (mean = 51.58, standard deviation = 7.91), and the participants were mainly in the 41–50-year age group (72, 36.7%) and the 51–60-year age group (76, 38.8%). The majority of respondents were married (182, 92.9%). Table 1 details their characteristics.

3.2. Predictors of delay to treatment for UI

Table 2 lists the results of the univariate and multivariate logistic regression analyses. Older age (OR = 1.98, 95% confidence interval [CI]: 1.31–3.00), lower subjective UI severity (OR = 2.32, 95%CI: 1.38–3.87), and non-mixed UI (stress [SUI] or urgency UI [UUI] only) (OR = 1.60, 95%CI: 1.11–2.32) were significant risk factors for >3-year treatment delay. In Multivariate analysis, marital status, education level, monthly household income per person, health insurance status, and objective UI severity were not risk factors for longer delay to treatment.

Table 1 – Sample characteristics (n = 196).

Variables	Category	No. (%)
Age (years)	30~40	20 (10.2)
	41~50	72 (36.7)
	51~60	76 (38.8)
	60~70	28 (14.3)
Marital status	Married	182 (92.9)
	Unmarried	14 (7.1)
Education level	Primary school or illiterate	16 (8.2)
	Middle school	80 (40.8)
	High school or college	100 (51.0)
Monthly household income per person (CNY)	≤360	6 (3.1)
	360–1000	44 (22.4)
	>1000	146 (74.5)
Health insurance	Yes	163 (83.2)
	No	33 (16.8)
Subjective severity of UI	No effect	23 (11.7)
	Slight effect	105 (53.6)
	Moderate effect	62 (31.6)
	Severe effect	6 (3.1)
Objective severity of UI	Slight (1–5)	36 (18.4)
	Moderate (6–12)	121 (61.7)
	Severe (13–18)	38 (19.4)
	Very severe (19–21)	1 (0.5)
UI type	Stress	143 (73.0)
	Urgency	4 (2.0)
	Mixed	49 (25.0)

UI = urinary incontinence; CNY = Chinese yuan.

4. Discussion

UI is a common LUTS with much longer treatment delay and less help-seeking behaviour, especially in women [9,17,20]. As far as we know, this is the first study to include the impact of socioeconomic factors and UI-related factors on the length of delay to treatment for UI among community-dwelling women in China.

Previous studies have demonstrated that UI prevalence is highest in women in the 41–50- and 51–60-year age groups [21]. In line with previous findings that reported that older age is a significant predictor of longer delay to treatment in incontinent women [17,22], we found that there was longer delay to treatment among older women with higher UI prevalence, which reveals the severity of under-reported UI among older women in China. The delay may also be associated with how medical expenses are paid in China. The children typically pay some or all of their parents' medical expenses; in order to minimise their children's economic burden, older women may tend to ignore symptoms they do not consider life-threatening, and consequently delay treatment for conditions such as UI [15]. However, such actions could contribute to lower QOL, as UI is associated with depression and worse perceived health [23]. Therefore, it is urgent to develop lower-cost and effective community intervention programs for older women with UI.

Our results show that lower subjective UI severity, or lower perceived UI severity, contributed to longer delay to treatment. Some women may feel less troubled by UI than others did because they believed that they could successfully manage their symptoms independently [24]. Another study found that higher self-coping efficacy was a barrier to help-seeking intention for women with UI [7]. Other evidence has directly demonstrated that perceived UI severity is a predictor of help-seeking behaviour in incontinent women [17]. Considering these factors, it is understandable that women who report being less severely troubled by UI symptoms report longer delay to treatment and that they believe that they can manage UI successfully without additional assistance [25]. Thus, healthcare providers should be aware that some women hold such beliefs, and provide information about evidence-based self-management strategies or encourage them to seek professional treatment.

We subclassified the respondents according to their reported symptoms, such as SUI (leakage on effort or exertion, or on sneezing or coughing), UUI (leakage accompanied by or immediately preceded by urgency), or mixed UI (SUI and UUI co-occurring equally). Women with SUI or UUI alone had longer delay to treatment compared to women with mixed UI. This was unsurprising, as women with mixed UI symptoms typically describe more severe and troublesome incontinence than do women with only one type of UI [26]. This implies that

Table 2 – Predictors of delay to treatment ($n = 196$).

	≤3 years ($n = 132$)	>3 years ($n = 64$)	Univariate analysis	Multivariate analysis
	No (%)		OR (95%CI) p	OR (95%CI) p
Age (years)			2.15 (1.45–3.17) 0.000	1.98 (1.31–3.00) 0.001
30~40	18 (13.6)	2 (3.1)		
41~50	55 (41.7)	17 (26.6)		
51~60	47 (35.6)	29 (45.3)		
60~70	12 (9.1)	16 (25.0)		
Marital status			0.33 (0.11–1.01) 0.051	0.57 (0.16–2.05) 0.387
Unmarried	6 (4.5)	8 (12.5)		
Married	126 (95.5)	56 (87.5)		
Education			0.92 (0.58–1.47) 0.733	1.42 (0.81–2.49) 0.223
Primary school or illiterate	11 (8.3)	5 (7.8)		
Middle school	52 (39.4)	28 (43.8)		
High school or college	69 (52.3)	31 (48.4)		
Monthly household income per person (CNY)			0.86 (0.49–1.53) 0.613	0.94 (0.46–1.89) 0.861
≤360	4 (3.0)	2 (3.1)		
360–1000	28 (21.2)	16 (25.0)		
>1000	100 (75.8)	46 (71.9)		
Health insurance			0.40 (0.16–1.03) 0.058	0.47 (0.16–1.36) 0.164
None	105 (79.5)	58 (90.6)		
Some	27 (20.5)	6 (9.4)		
Subjective severity of UI			2.70 (1.67–4.38) 0.000	2.32 (1.38–3.87) 0.025
No effect	17 (12.9)	6 (9.4)		
Slight effect	83 (62.9)	22 (34.4)		
Moderate effect	32 (24.2)	30 (46.9)		
Severe effect	0 (0.0)	6 (9.4)		
Objective severity of UI			2.87 (1.68–4.89) 0.000	1.52 (0.76–3.07) 0.240
Slight (1–5)	28 (21.2)	8 (12.5)		
Moderate (6–12)	90 (68.2)	31 (48.4)		
Severe (13–18)	14 (10.6)	24 (37.5)		
Very severe (19–21)	0 (0.0)	1 (1.6)		
UI type			2.02 (1.43–2.83) 0.000	1.60 (1.11–2.32) 0.029
Mixed	21 (15.9)	28 (43.8)		
Stress	108 (81.8)	35 (54.7)		
Urgency	3 (2.3)	1 (1.6)		

UI, urinary incontinence; CNY, Chinese yuan.

community health professionals should prioritise interventions for incontinent women according to UI type, and women who report SUI or UUI should be targeted for education and intervention.

One of the limitations of this study was that it was a cross-sectional study limiting causal inference between predictors and delay to treatment. Moreover, although the research team members who conducted the survey were well trained and all questionnaire items were clearly stated, the self-reported nature of the questionnaire meant that information bias was inevitable. Despite these limitations, this study provides valuable insights into factors predicting delay to UI treatment among community-dwelling women in mainland China. In developed countries, UI receives more attention from healthcare providers and there are many management and treatment strategies for it [1]. However, health education and interventions for most women with UI are unavailable in developing countries, especially in communities. Using China as an example, one community nurse is expected to provide care to about 11,114 residents, a much higher ratio than that specified by the World Health Organization [27]. Thus, it is possible that the prevalence of UI and rate of treatment delay will remain high due to the inadequate health education and intervention in China and other developing countries. Therefore, our findings are a good resource and an important means of identifying and focusing on women who have long-term symptoms of UI and who have not sought help.

5. Conclusion

Delay to treatment for UI is common among older community-dwelling women. Women who report SUI or UUI alone intend to delay seeking treatment. Based on the chronic progressive process of UI, older women with lower subjective UI severity and SUI or UUI alone should be targeted for community health education and intervention to promote timely treatment for UI. Thereafter, the negative psychological effect and higher cost of managing UI may be controlled in a timely manner. Our findings also have implications for public health education and public health intervention efforts regarding UI and they can be applied to other developing countries, where community resources are insufficient for addressing this under-reported issue, which affects many women.

Conflict of interest statement

All authors declared no conflicts of interest.

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